

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (currently amended):       A wireless local area network system, comprising:

        a gateway performing functions of a home agent in a mobile wireless communication environment and sending prefix information; and

        one or more access points, each access point allocating an Internet Protocol (IP) address to a mobile host in a management range thereof by using the prefix information of the gateway,

        wherein said each access point produces and sends a Binding Update list corresponding to the mobile host to the gateway,

        wherein when said mobile host moves into a range of a different access point associated with a new access router, said mobile host retains the prefix information of the gateway,

        wherein the new access router generates an access router advertisement message based on a prefix advertisement message received from the gateway and sends the generated access router advertisement message to said different access point,

        wherein said different access point extracts the prefix information of the gateway based on the access router advertisement message and transfers the extracted prefix information to the mobile host;

wherein the mobile host receives the prefix information of the gateway and retains the received prefix information, and

wherein respective mobile hosts in networks controlled by the gateway have a same prefix in addition to a mobile host ID, said mobile host ID being a media access control (MAC) address, and

wherein said each access point generates a unique IP address for each mobile host in all the networks controlled by the gateway by combining the prefix information received from the gateway with the mobile host ID received from the mobile host.

2. (original): The wireless local area network system as claimed in claim 1, wherein when a packet is sent from a correspondent node to the mobile host, the gateway encapsulates a header portion of the packet with a source address and a destination address, and an access point corresponding to the destination address decapsulates the encapsulated packet sent from the gateway.

3. (original): The wireless local area network system as claimed in claim 1, wherein when a packet is sent from the mobile host to a correspondent node, the access point defining the management range of the mobile host encapsulates a header portion of the packet with a source address and a destination address and sends the encapsulated packet.

4. (original): The wireless local area network system as claimed in claim 1, wherein the gateway manages one or more access routers, each access router manages one or more access points, and each access point manages one or more mobile hosts.

5. (original): The wireless local area network system as claimed in claim 4, wherein the IP addresses for the mobile hosts have the same prefix information.

6. (original): The wireless local area network system as claimed in claim 1, wherein the IP address for an access point serves as a Care-of Address (CoA) for each mobile host within the management range of the access point.

7. (original): The wireless local area network system as claimed in claim 1, wherein each access point includes:

an IP address generation unit for generating the IP address for the mobile host in the management range of the access point by combining the prefix information and a MAC address of the mobile host;

a binding cache for storing information on the generated IP address and corresponding mobile host; and

a Binding Update (BU) transmission unit for sending to the gateway the produced Binding Update list for the mobile host.

8. (original): The wireless local area network system as claimed in claim 7, wherein each access point further includes a decapsulation unit for decapsulating a source address and a destination address that are encapsulated with a header portion of a packet sent from a correspondent node.

9. (original): The wireless local area network system as claimed in claim 7, wherein each access point further includes an encapsulation unit for encapsulating a header portion of a packet to be sent to a correspondent node with a source address and a destination address.

10. (currently amended): An operation method for a wireless local area network system, comprising:

sending prefix information of a gateway, by the gateway, according to a request of a mobile host wherein the gateway performs functions of a home agent in a mobile wireless communication environment;

allocating an Internet Protocol (IP) address to the mobile host by using the prefix information;

associating the mobile host with an access point having a management range within which the mobile host is located;

producing a Binding Update list for the associated mobile host; and

sending the Binding Update list to the gateway,

wherein when said mobile host moves into a range of a different access point associated with a new access router, said mobile host retains the prefix information of the gateway,

wherein the new access router generates an access router advertisement message based on a prefix advertisement message received from the gateway and sends the generated access router advertisement message to said different access point,

wherein said different access point extracts the prefix information of the gateway based on the access router advertisement message and transfers the extracted prefix information to the mobile host; wherein the mobile host receives the prefix information of the gateway and retains the received prefix information, and

wherein respective mobile hosts in networks controlled by the gateway have a same prefix in addition to a mobile host ID, said mobile host ID being a media access control (MAC) address,

wherein said access point generates a unique IP address for each mobile host in all the networks controlled by the gateway by combining the prefix information received from the gateway with the mobile host ID received from the mobile host, and allocates the generated unique IP address to the mobile host.

11. (original): The operation method as claimed in claim 10, further comprising, when a packet is sent from a correspondent node to the mobile host,

encapsulating a header portion of the packet at the gateway with a source address and a destination address and sending the encapsulated packet; and

decapsulating a header portion from the encapsulated packet sent from the gateway.

12. (original): The operation method as claimed in claim 10, further comprising, when a packet is sent from the mobile host to a correspondent node, encapsulating a header portion of the packet at the access point with a source address and a destination address, and sending the encapsulated packet.

13. (original): The operation method as claimed in claim 10, wherein the gateway manages one or more access routers, each access router manages one or more access points, and each access point manages one or more mobile hosts.

14. (original): The operation method as claimed in claim 13, wherein the IP addresses for the mobile hosts have the same prefix information.

15. (original): The operation method as claimed in claim 13, wherein an IP address for each access point serves as a Care-of Address (CoA) for each mobile host within the management range of the access point.

16. (original): The operation method as claimed in claim 10, wherein the mobile host association operation includes:

generating the IP address for the mobile host in the management range of the access point by combining the prefix information of the gateway and a MAC address of the mobile host;

storing information on the generated IP address and the corresponding mobile host;

producing a Binding Update list of the associated mobile host; and

sending to the gateway the produced Binding Update list for the mobile host.